Spring 2-6-2017

The Impact of Student Completion Requirements Using an LMS (Learning Management System) on Student Achievement and Differentiated Instruction in The Classroom.

Laura Burgstrom
The College at Brockport, lburg4@u.brockport.edu

The Impact of Student Completion Requirements Using an LMS (Learning Management System) on Student Achievement and Differentiated Instruction in The Classroom.

Laura Burgstrom

The College at Brockport, State University of New York

December 2016

Table of Contents

Abstract

School classrooms today are immersed with technology and learning management systems that provide teachers with tools to organize their classroom. However, many teachers do not know the capabilities of these LMS programs to differentiate instruction and tailor learning to meet the needs of every student in the classroom. This mixed methods study investigated the impact on student achievement of a Learning Management System called Schoology. The study also examined the Learning Management System's ability to effectively differentiate instruction to meet the needs of all learners as a means to increase student achievement. Culminating assessment scores were compared from a prior unit without student completion requirements to a unit with 100% mastery student completion requirements. Additionally, participating students took part in a 10 question survey that asked them to share their opinion and experience with Schoology. Results suggest Schoology as an effective learning instrument for students in the classroom. Quantitatively, students are seeing higher assessment scores when given student completion requirements such as 100% mastery. Qualitatively, the survey shows students are recognizing the ability of Schoology to aid in their individual learning, allowing them to pace their own learning in the classroom.

Section One: Introduction

Problem Statement

In an ever-changing technology-dependent world, cell phones, computers, and tablets are being integrated into the classrooms of adolescent students. Many schools are moving towards a stoplight system in which all students are allowed to use their devices freely in school hallways, cafeterias, libraries, etc. Teachers and administrators have mixed opinions about whether or not allowing students to use devices in the classroom has been beneficial to instructional gains. How about the use of technology as a learning management system? The district in which I am currently working had teachers pilot a LMS program called Schoology from the 2015-2016 school year. Schoology serves as a one-stop shop for educational needs for the teacher and student with grading capabilities and student completion requirements, and it is intuitive for both the teacher and student.

While working with the LMS program during a pilot of the system, I became interested in the possibilities for differentiated instruction using the unique features that Schoology offers. In the education field, teachers hear a lot about the importance of differentiation but not as much about differentiating up, to meet the needs of advanced learners. Many of the tools, settings and feature capabilities within this LMS allow for a teacher to pre-set requirements and differentiate a lesson plan to truly meet the needs of every individual student. Throughout my research on technology, I have noticed that there is not much available discussing learning management systems in the classroom.

The focus of this study is to determine the impact of a learning management system on student's learning inside a classroom.

Significance of the Problem

Watson and Watson (2007) explain that "perhaps the greatest possibility for improving these technologies lies in the hands of learners, teachers, and other stakeholders" (p. 32) The potential growth of student achievement of an LMS is based upon a teacher customizing completion requirements to meet the needs of all learners in the classroom. Each LMS is different because the teacher can customize the settings and make it their own. Watson and Watson explain that there needs to be much more research done within the realm of implementing and using an all-encompassing LMS for any school, aside from just understanding the consistent use of terminology. The authors further explain that there needs to be research done that shows the effectiveness and opportunity for differentiation. Watson and Watson state that, "Studies about the implementation and effectiveness of the LMS products discussed in this article are needed. These studies should examine more closely what features these products offer and identify the additional features that are needed" (p. 32). It was important that I measured the impact of student completion requirements on culminating assessment scores to determine how using an LMS can have on student achievement. There is very little research on these new teaching management systems during a period of high technological integration within schools. Additionally, it is important that I asked for student feedback and reflection using the program themselves in my classroom because they are the most important stakeholders involved and the investment in our future.

Research Questions

This research examines two research questions for this study. The first question explores the impact a learning management system has on differentiated instruction in the classroom. The second question determines the impact 100% mastery completion requirements has on culminating student assessment scores using an LMS.

Purpose of the Study

My school district has integrated Schoology into our instructional practices for the 2016-2017 school year. It is essential to understand the potential for growth as well as to determine best practices for using the program effectively in the classroom. Specifically, this study focused on how the student completion requirements (viewing requirements, necessary completion grades, and order of completion) impact student achievement. If students normally do an assignment on paper, turn it in, receive their score back a few classes later, it delays the process of getting back feedback. With an LMS like Schoology, students can take one quiz either 2, 5, or 8 times depending on the exposures they need in order to reach 100% mastery (one of the student completion requirements that was used in this research). Students were also given a qualitative survey that asked them 10 questions about their experience using Schoology.

Rationale

Data is an important component in education, as it drives instruction, and the decisions administrators and school leaders make about instructional goals based on the data, contribute to the district's overall effectiveness. The data from this study is important to understand because of the quantitative impact of using student completion requirements. Learning is a new dynamic in classrooms today, and it is time that educators start using the tools to benefit the students in

the best and most effective ways possible. Uncovering the significance of a program such as Schoology gives a district cause for implementation. Additionally, the survey provides feedback about students' performance in order to reflect on instructional practices and make informed decisions about what's best for student learning.

Summary

During my data collection, I used a mixed methods research design which focused on both qualitative and quantitative data. The quantitative data consisted of unit assessment scores for two units for every 8th grade student in this researcher's selected class. Qualitative data was collected through an anonymous survey that asked students ten questions about their experience with Schoology and the features that it offered. All of this data was collected in order to study how Schoology could impact student achievement and help support differentiated instruction in the classroom.

Definition of Terms

Learning Management System-A software application for administration, documentation, tracking, reporting, and delivery of electronic educational technology for instructional purposes.

Differentiated Instruction-A framework or philosophy in education that involves the planning and implementation of lesson plans to meet the needs of diverse students.

Student Completion Requirements-Rules placed on course folders or course materials within Schoology. These requirements must be completed by the students in the course, and are only set by the teacher.

Intuitive-Having a natural understanding of things based on a feeling or intuition.

Chapter Two: Literature Review

The process of learning takes time. There are tools and strategies teachers use to both speed up and to focus in on what content or skills in which students are not sufficient. This study looked at student's progress on unit assessments when individual student completion requirements were given on assignments within the second unit. The research referenced throughout this literature review looks at the impact of using technology in the classroom, and how it can support student growth. Ultimately, students' ownership in their learning helps motivate them. The study gauged student opinions about working with Schoology in their social studies classroom and the unique customization settings that can be used within the program. Student's completion of the survey demonstrated their reflection of their learning and work within the learning management system. The literature review examines the power of online learning, the importance of differentiated instruction, and the ability to have student ownership in the classroom.

What is a Learning Management System?

There is debate about what a learning management system is, is not, and can be in a classroom today. Watson and Watson (2007) write that "LMS has its history in another term, integrated learning system (ILS) which offers functionality beyond instructional content such as management and tracking, personalized instruction and integration across the system" (p. 28). The LMS called "Schoology" that was used in this study has individual progress monitoring capabilities as well as student completion requirements that tailor my lessons and assignments to meet individual student abilities and goals.

The Power of Technology in the Classroom

LMS programs "…are systemic in nature and offer the necessary functionality to support online or blended courses, and to manage the learning process" (Lochner, Conrad and Graham, 2015, p. 64). The interactivity between teacher and student that is offered by LMS programs is an unparalleled educational tool. Andert and Alexakis (2015) completed a study where they looked at the virtual teaming applications available for accelerated team and group work. The authors acknowledged that students today need to be able to do more than just be aware of how to use various types of social media in order to meet the workplace need in the future and work with other people successfully. In this study, the researchers asked students to use new technologies that included Google Docs, Google Drive, Skype, and PhotoSphere (p. 129). The authors debated the ability to measure social learning and group work within this study. Not all learning can be measured. Andert and Alexakis (2015) concluded that a generic and sole method of instruction is not effective for any group of learners, but rather, multiple pathways for success. According to Andert and Alexakis (2015) "none of the…traditionalist learning theorists could likely fathom the rise of the digital generation, shortened information shelf like phenomenon, massive spontaneous information flood, and a student who is a consumer of mass gathered data, information, and new knowledge-all at their digitally capable fingertips" (p. 133). In the job-market today, it is a necessity for students to be able to compete with others and be capable of using many technology tools. New technologies replace old ones that seemed new yesterday. Andert and Alexakis (2015) emphasize the importance of technology today for our ever-increasingly technology dependent global community, stating, "…organizations have increased their reliance on technology as a mode of communication – that much is self-evidence. The

current workplace emphasis on teamwork, technology, and globalization make these core ideas ripe for researching and advancing management education" (p. 132).

Differentiated Instruction

When teachers tailor lessons and their own demands to meet the needs of their students, they are differentiating instruction. Differentiated instruction is an indispensable characteristic of a good classroom. Classrooms today are more diverse than ever and consist of students with completely different learning and management needs. Students learn at different paces, and they have strengths and weaknesses that have to be learned, addressed, and monitored by their respective teachers. Many times behavioral or discipline issues can be avoided by creating lessons for students at the correct level of challenge for them. Sometimes if something is not challenging enough, students get bored and act out. Other times, when something is too difficult, students lose confidence in themselves and give up. Teachers must match the learning styles to fit their students, and hopefully, at an individual level. Morgan (2013) defines differentiated instruction as "…a way of recognizing and teaching according to different student talents and learning styles" (p. 34) Teachers are tasked with modifying instructional exposure for students in order for all students to be successful. Morgan (2014) states that "…the mixing of students is increasing at a rate not witnessed before in American schools, and student access to difficult courses is expanding as a result of calls for all learners to achieve at higher levels. Consequently, more nontraditional learners are sitting in the schools' most rigorous classes, and for this reason the use of differentiated instruction could be more important than ever" (p. 36). The author uses the research of Howard Gardner's theory of multiple intelligences and Lev Vygotsky's concept of the zone of proximal development in order to explain the need for

personalized instruction (p. 36). For those students who do not "…fit the mold," the author recommends three strategies, "…emphasizing student interest, using the right starting point, and allowing students to work at their own pace" (Morgan (2013), p. 36). Students have to be motivated to learn and enjoy their learning and have choice and autonomy in the classroom.

Software that Combines Technology and Differentiated Instruction

Watson, Watson and Reigeluth (2013) call for new educational software that lets the stakeholders in a learning environment have customization, interoperability and learner control. The authors state, "in order to meet the needs of today's knowledge economy, education needs to move beyond the industrial age approach of treating all learners as if they are the same and adopt a learner-centered model of education suitable for the information age" (p. 332). The industrial-age, profit-based model of education needs to be transformed into reactive classrooms that work alongside students to meet their diverse needs and prepare students for twenty-first century work environments. Morgan (2013) argues that digital resources be used to support struggling learners, as technology offers various formats of learning that can be easily accessed by teachers and students. Educators know that differentiated instruction is a cornerstone of effective teaching. Why not utilize technology to help make this a reality in every classroom and at every child's ability level? Lalley and Gentile (2009) write about the importance of all learners in the classroom and what to do after mastery achievement has been reached. Especially in a social studies classroom, where content is key, teachers need to think beyond the content understanding (and mastery). The authors suggest "the faster students are doing enrichment projects, including helping the slower ones, because they would never be permitted to settle for the lowest passing grade in the course" (Lalley and Gentile, 2009, p. 35). Normally, mastery can be seen as the end goal with a 100% score on the content. However, the authors highlight the importance of having mastery as an expectation and moving

students beyond just the first and second levels of Bloom to higher level thinking and application where they are creating and producing.

Andert and Alexakis's study (2015) showed that groups and teams could effectively work together and even learn teamwork online with the incorporation of inclusive design models for a diverse population of people. With diverse students in any group or class, Schoology offers a program that has the potential to diversify a lesson for every student. Without technology, this could not be done. A teacher could not grade a quiz, give feedback, and return it for the student to take a second and third time in one class. Nor could a teacher do this for every student at various times in one classroom. LMS programs offer this as only one of the many resources to support differentiated learning.

Teacher Concerns for Adopting Learning Management Systems

The district's success of implementing a new technology resource is a direct result of teacher's efforts. Teachers may not necessarily be against adoption of the new innovation, but may be lacking information, supports, and/or leadership that provides them with sufficient time to learn the tool correctly. Lochner, Conrad, and Graham (2015) looked at the current secondary teachers' opinions and reactions for implementing technologies into their teaching practices. The large-scale study used all full-time teachers in public secondary schools in Arizona, who have adopted an LMS in their classroom. The findings of this study suggested that the majority of teachers were apprehensive about accepting a new technology program, and do not have information or enough knowledge about many programs to make wise decisions relative to their needs (p. 66). The authors explained that a huge factor in the implementation of a new program is the buy-in from teachers (Lochner, Conrad and Graham, 2015). The study showed that once

teachers reverse their concerns, with the help of district leaders, progress can take place in the realm of integration. Additionally, the study showed that if teachers are not provided with the supports and help that they need to effectively integrate a program, the concerns and fear of implementation remains. Lochner, Conrad, and Graham (2015) call for "…administrators and other school leaders hoping to positively affect student learning through the use of the LMS…to provide demonstrations of how the use of the innovation can address the personal concerns of the teachers" (p. 68) Concerns-based professional development rather than a professional development model based on skills is a way to address teacher attitudes and feelings against a program in order to efficiently move forward, both for the teacher and the district.

The Need for Professional Development and Teacher Support

With any change, time is a necessary cost of implementation. Watson, Watson and Reigeluth (2013) argue for a new transformative technology. The author's state, "the design and development of such a technology will likely be expensive…is needed to successfully implement the new paradigm…" (p. 341). Districts are committing to the high-cost programs, such as LMS programs, to support teachers in their quest for twenty-first century classrooms and practices. According to Morgan (2014), "students need to comprehend little and lose focus of classroom instruction when their teachers fail to use instructional strategies that match students' learning styles" (p. 34). With such a high demand for technology today in student's lives, teachers need to be equipped with the tools and resources to meet this global workforce necessity.

Supports need to be put into place for all teachers utilizing a new program or curriculum. These supports can be time-consuming, expensive and exhausting. Many times teachers feel as though they are not financially supported to develop their new curriculum using the program

with sufficient professional development opportunities, equipment, and/or time. In the school district this researcher is working, Schoology was piloted during the 2015-2016 school year. After piloting, Schoology was deemed as the new online learning management system for the school to begin implementation during the 2016-2017 school year. There is a great need for professional development and time for teachers to make the shift with any new initiative. Gunn and Hollingsworth (2013) researched a district's 3-year long implementation of professional development "…involving the implementation of technology, differentiated instruction, and assessment for learning…" (p. 201). The researchers noted that as many school districts are shifting towards meeting 21st century skills and learning needs, they are not necessarily providing professional development or teacher supports that will help to best serve the students. The purpose of the study was to show how 21st century strategies and learning could be implemented district-wide in order to empower educators, rather than incite the fear of change. Each year of implementation, the researchers administered a survey to the teachers within the focus school district. Gunn and Hollingsworth (2013) found that after each year of implementation, the teachers' perceptions of their own technology skills was better, and their perceptions of technology became more positive (p. 213). One aspect of new technology that this researcher has seen in the district in which this study was given is the amount of veteran teachers who are apprehensive to integrate new technologies in their classrooms due to a concern of it being discontinued soon after. Many of them expressed the idea that there is no point to join the newest craze because it will be gone by the time they learn it. Gunn and Hollingsworth (2013) found that for older teachers (41-50 years and older), they were less confident than younger teachers in their abilities to use new software, and they showed a "…greater resistance

or lack of efficacy amongst teachers who were likely students in the years prior to technological literacy" (p. 213). These researchers showed that increased time in professional development opportunities had a successful impact on teachers and their practices (p. 213). To embark on any journey with instructional technology, there requires significant support at the school and district levels.

Lack of Research

Andert and Alexakis (2015) recommend that more research be done to learn about the team-centered and project-centered activities that utilize an online technology tool or resource for inquiry and to accelerate the learning of participants (p. 132). Watson and Watson (2007) state that, "studies about the implementation and effectiveness of the LMS products discussed in this article are needed. These studies should examine more closely what features these products offer and identify the additional features that are needed" (p. 32). With the social studies new instructional inquiries, these online tools can support implementation of the inquiries into the classroom. The technologies offer opportunities for monitoring and assessing information, as well as allowing flexibility, accessibility, and collaboration amongst group members.

Summary

Students require a differentiated learning environment that allows them to reach 100% mastery through multiple paths and completion requirements. An LMS aids in offering a professional learning environment for students and teachers to support students in achieving mastery in content and developing skills and experiences with technology. This qualitative study looked at the impact of 100% mastery student completion requirements on student achievement for culminating assessment scores. Additionally, this study surveyed students to find trends

through constant comparison in order to find themes that emerged amongst student responses to questions about their experience working within an LMS for their Social Studies class.

Chapter Three: Methods and Procedures

Introduction

This research design was a mixed methods study looking at the impact of student completion requirements, using a learning management system, on student achievement in the classroom. Through a comparative analysis of student culminating assessment scores from two units, one with student completion requirements and one without, I was able to analyze student progress and achievement with the use of a Learning Management System. Through the analysis of student survey responses, I was able to examine trends of student opinions, reflections, and feelings towards using the LMS in their social studies classroom.

Research Questions

I answered two research questions for this study. My first research question was "what impact can a learning management system have on differentiated instruction in the classroom?" My second research question was "What impact can 100% mastery completion requirements, using an LMS, have on culminating student assessment scores?"

Participants and Setting

The anonymous data from 26 students' summative assessment scores from two 8th grade social studies units was analyzed for trends. The two units, Westward Expansion and A Changing Society, were assessed with a multiple choice assessment at the end of each unit. The Westward Expansion unit included classwork and assignments using Schoology but included no

100% mastery student completion requirements for quizzes before taking the culminating assessment. The next unit, "A Changing Society," included multiple mini-assessments, or checks for understanding, that required students to receive a perfect score of 100 before moving on to the next assignment. Of the 26 students, 11 of these students who returned parental consent participated in a qualitative survey that provided ten questions about their use of Schoology. The participants were asked to complete the survey at the end of their assessment, but they did not need to complete the survey or stay late if they took up the entire class period working on their assessment. These Participants range in age from 12 to 14 years old, with the majority being 13 years old. This is the researcher's sole 8th grade class for the 2016-2017 school year. At the participant's middle school, according to the NYSED Report Card data for the 2015-2016 school year, the total student population is 871 for grades 6-8. There are 419 (48.1%) female students and 452 (51.9%) male students. The school ethnicity consists of 730 (83.8%) White, 54 (6.2%) Hispanic or Latino, 38 (4.4%) Black or African American, 27 (3.1%) multi-racial, 19 (2.2%) Asian or Native Hawaiian/Other, and 3 (0.3%) American Indian or Alaska Native.

Students in this 8th grade classroom have one teacher, this researcher, and there are no push in Special Education teachers or teacher aides. The class meets four out of every five school days and the class periods last 50 minutes. Students use computers every day in class, with the time and type of assignments dependent on that day's lesson.

Positionality

During this study, I served as the 8th graders Social Studies teacher. This is my third year working in this school district. Along with 8th grade, I also teach 7th grade U.S. History and 10th

grade Global History. Since the beginning of the school year, I have enjoyed working with this group of 8th graders and watching them grow in an educational capacity. During this study, I was a graduate student studying Literacy Education (B-12) at the College at Brockport, State University of New York (SUNY), and my pending graduation date is December 2016. I earned my Bachelor of Arts degrees in History, Adolescent Education, and Special Education from St. John Fisher College located in Rochester, NY. I used to be a student at the school in which I am currently teaching and researching. I also live in the area.

I am interested in how an LMS can impact student learning in order to maximize growth and the use of time within a classroom. With such diverse populations of students entering into my classroom each year, I don't think that any teacher can go without differentiated instruction. Technology is a tool and resource that allows differentiated instruction to be hidden, and it allows for students to learn and re-learn at their individual levels of need.

Procedures of Study

Schoology is a learning management system, utilized throughout their social studies class. Students in the class have already been working in Schoology throughout the 2016-2017 school year. However, with this unit, they are going to have unique "student completion" requirements that will require them to have 100% mastery before moving on to the next assignment. These pre-set requirements were implemented in this class and required a specific order for completion for each task. This order was pre-determined and set by the teacher/researcher. On the last day of the unit, when students completed their final assessment, they also completed an electronic survey that asked them about their experience working in Schoology. Students took only one survey at the end of the unit. The survey included open-

ended questions about their work in Schoology and their experience with the student completion requirement settings set by the teacher. This researcher used the online survey tool, Survey Monkey, to collect data from each student. Students were provided with a URL link that took them to the Survey Monkey and the first questions. Once they completed the survey, they exited off the URL link. Students completed the survey on their electronic devices.

The students were informed that they would not benefit from completing the survey and they would not have any punishment for not completing the survey. The students who had their consent forms turned in were the only ones who participated in the survey. Students were not pressured to hurry through their culminating assessment in order to have time to complete the survey. Students were not asked to stay late if they took longer on the test and were not asked to take the survey outside of the class. The student completion requirements and all classroom activities were no different to students participating or not participating in the research study. Participating students provided their parents with a statement of informed consent for parents of minors in order to participate in the study. All students who returned the consent form with their parent/guardian signature were given the option to participate in the survey and be included in the study.

Methods of data analysis and collection

Students were informed that the survey was for my master's program capstone thesis paper and the data was going to be collected anonymously. Student test scores were compared with previous unit test scores. Students' names were used during the research data analysis in order to compare individual unit scores. However, the reporting was done using pseudonyms.

The qualitative survey responses were printed off and analyzed for common themes. I used constant comparison and coding to find the themes that emerged throughout the student responses. Additionally, the culminating assessment scores, or unit test grades, from the unit were compared to the previous unit, when student completion requirements to differentiate learning were not used. There was no linkage between student responses to the survey and assessment scores from any unit.

Criteria for Trustworthiness

The survey was completed anonymously; and therefore, no personal identifiers were kept on the subjects. The anonymity of the survey response collection resulted in no individual data or information being accessible to anyone, including the researcher. Survey Monkey responses are password protected with the researcher being the only person with the Survey Monkey login password. The culminating assessment scores were looked at comparatively with the students' previous unit scores. These scores are kept in a password protected electronic gradebook of the researcher. Only pseudonyms were used to report score performance correlations between the two units for individual students. Aggregated data is reported using graphs and charts. The master list is stored in a locked filing cabinet with only the researcher having the key. The master list will be destroyed 3 years from the completion of the research. The student responses were coded and reported based on the trends found. No printed records of the survey responses were kept or recorded. The Survey Monkey responses and data will be deleted off the Survey Monkey account 3 years after the completion of research.

Chapter Four: Data Analysis/Findings/Results

Introduction

Engagement can be measured and seen in many forms. The Learning Management Systems allow student engagement to happen in many different ways with some kind of stimulus or input, and then outputs that asses the success of each. Andert and Alexakis (2015) state "…student's need to learn beyond just mental discipline and stimulus response….a greater importance on direct, actionable application and…action learning…self-education flourishes spontaneously with little to no teacher intervention….illiterate learners can self-organize and self-education (p. 125). With the amount of ways and strategies that a teacher can present and assess information using an Learning Management System, there are no boundaries for what can be created. The authors also found that the potential for growth in online pedagogies and the importance of course design and delivery are essential to meet the demands of today's millennial and generation x student-learners (p. 132).

I collected anonymous student data from the culminating assessment scores in my gradebook. I gave each student a number and wrote down their assessment score for each of the two units. I used charts and tables to analyze the data. Then I analyzed the surveys to look for similar themes. I looked at every response and coded each response to the 10 questions as positive, negative, both (mentioning a positive and negative detail about Schoology in their response), and unclear. There were no unclear responses, so that category was eliminated for the purposes of illustrating the data. I tallied trends of what students enjoyed about Schoology, such as special features or ways that they learn best using the program. The survey responses aided

the research about the need for differentiated instruction. Those findings will be discussed in the lower sections.

The purpose of my study was to find out the impact of student completion requirements using an Learning Management System, Schoology, on student achievement in the classroom. I explored the ability of Schoology's student completion setting of 100% mastery as a means to increase achievement on assessments. I discovered themes within the survey as well as trends within the culminating assessment score data analysis. I recognized that student culminating assessment scores increased using the 100% mastery requirement, and students reported primarily positive feedback regarding their time in Schoology so far this year.

Finding One: Assessment Scores Improved

Student culminating assessment scores improved between the first unit and the second unit, when student completion requirements were added to the unit assignments leading up to the culminating assessment. The average grade out of the 26 students increased between the two culminating assessment scores by 9.37%.

In reference to figure 1.1 below, each student number represents one student's grade for each of the unit assessments: no mastery completion requirement for their first assessment and mastery completion requirement added for their second. This means that within their unit, they had multiple exposures to checks for understanding of the content where 100% mastery was a requirement before moving on to the next assessment. According to figure 1.1, the standard deviation for the first assessment is 13.4. The standard deviation for the second assessment is 9.37. The population of students achieving scores in a smaller range for the second assessment was compared to the first.

In reference to figure 1.2 below, the 21 students who had a positive change in their assessment scores from the first assessment to the second grew on average of 12.05% for their second assessment. There were only four students who had a negative change between the two assessments, and the decrease in score was 2.38%, much lower than the growth from the other students. Lastly, there was one student, student 3, who had no change in score between the two assessments, but it is important to note that this student was one who received a 100% or perfect score for both assessments.

Not only were the overall averages much higher the second time students took a culminating assessment once student completion requirements were used within the unit materials, but the percentage of growth for the scores was significantly higher, 9.37 %, as the average gain for all students taking the assessment. Additionally, the increase in score for the 21 students who improved their second assessment was much greater than the negative change in scores for the 4 students who had a lower score for the second assessment.

Culminating Assessment Score Results			
Student	**No Mastery Completion Requirement**	**Mastery Completion Requirement**	**Change**
1	100	96.5	-4%
2	53	90	37%
3	100	100	0%
4	73	93	20%
5	80	93	13%
6	47	63	16%
7	93	100	7%
8	90	93	3%
9	87	97	10%
10	90	93	3%
11	90	100	10%
12	73	100	27%
13	87	93	6%
14	73	70	-3%
15	100	98.5	-2%
16	90	93	3%
17	90	100	10%
18	73	100	27%
19	87	93	6%
20	70	73	3%
21	100	98.5	-2%
22	93	100	7%
23	93	96.5	4%
24	77	93	16%
25	80	97	17%
26	73	81.5	9%
Average	**83.15**	**92.52**	**+9.37%**
Standard Deviation	**13.40**	**9.66**	

Figure 1.1. Culminating Assessment Score Results. These results illustrate the impact of student completion requirements using an LMS.

Change in Student Scores		
Change	**Count**	**Average Change**
Negative Change	4	-2.38%
Positive Change	21	12.05%
No Change	1	0.00%

Figure 1.2. Change in Student Scores. These results illustrate the change between the first and second culminating assessment scores and the totals for each.

Finding Two: Decrease in Grade Variability

Not only did overall grades increase from the first to second assessment, but the majority of grades fell within the "A" range for the second culminating assessment, between 90-100. Referencing Figure 1.3 below, for the first culminating assessment, 12 of the 26 students received a grade between a 90-100 out of 100. For the second culminating assessment, 22 of the 26 students received a grade between 90-100 out of 100. The percentage of students in the "A" range went from a 46% to an 85%, respectively. There is less variability in the overall grades for the second assessment, unlike the first. Instead of having a grade range from 47% to 100%, the second assessment resulted in scores that had a smaller range overall from 63% to 100%. Therefore, there is a decrease in variability within the class grade distribution.

Distribution of Grades			
Grade/Score Range	**1st Assessment** (No Mastery Completion Requirement)	**2nd Assessment** (Mastery Completion Requirement)	**Change in # of Students in Each Range**
40-49	1	0	-1
50-59	1	0	-1
60-69	0	1	1
70-79	7	2	-5
80-89	5	1	-4
90-100	12	22	10
Percent of Students in "A" range	**46%**	**85%**	

Figure 1.3. Distribution of Grades. These results support the first finding, but illustrate the degree of change for student grades from the first to second assessment.

Findings 3: Student Reaction to Schoology 90% Positive in Survey

Students' responses to 10 questions about their use with Schoology supported the integration of the LMS into their Social Studies class. 90% of the responses were correlated as a positive connection or experience with the LMS program. This researcher looked at this data by analyzing each of the 11 survey responders answers for trends and themes using constant comparison. Figure 1.4 below tallies and outlines the types of responses from each student for each of the 10 survey questions.

Question 1 asked, "How has your experience with Schoology been in class?" with 9 students of the 11 making a positive statement about Schoology such as it being fun, helpful, easier to access, and allowing for many sources to be easily viewed at once. There were 2 survey responses that were a combination of both positive and negative accounts. One response stated, "To me it was really good. I am surprised that it is so new and so amazing and still could update

and be better." The second response stated, "My experience with Schoology in class has been very good. I have enjoyed it a lot. Sometimes I get frustrated when it doesn't work but for the most part it is very helpful in class." Both responses demonstrate a liking of Schoology, and offer some kind of opposing viewpoint. The second statement about not working is due to internet issues or connections in class that delay assignments.

Question 2 had 9 positive, 1 negative and 1 combination of negative and positive in the student response. The negative response was "Yes and no. Yes, because it helps our grades and helps us improve, and no, because it can put more stress on us knowing that we keep on taking it until we get a 100." The student knows that if they don't do well, they will have to keep taking the assessment. The combination response stated, "No, I do not believe that a student must complete something until they get it right. They should receive help after a bad grade or an answer key to fix and study." This response does not connect to the same student's response to question three, stating, "YES IT WAS GREAT!!!!" when asked about how the mastery completion requirements have helped them.

All students made positive remarks in their responses to questions three and four on the survey. One common trend that emerged in student responses to number four was the amount of organization Schoology provides to the students. This includes the folder and resources in Schoology, noted by 4 of the 11 responses to question four. Question 5 is a unique question because it prompted a negative to be shared about Schoology. Referencing Figure 1.5 below, the table shows a visual of the distribution of survey responses into the three categories of positive, negative, and a combination for each student response. Again, question 5 was a unique prompt for students, as it pointed out a negative of Schoology. That is the highest response total of

negative within the entire graph. Of the 11 responses, 4 students identified a problem with Schoology, and 7 stated that there was no problem that they could identify. For those four students, the problems that were identified about Schoology included the need to move, glitches with internet, too much time on Schoology, and too many folders on Schoology.

Question 6 asked about organization and order of completion, a requirement only a Learning Management System can provide to students and demonstrated 100% of survey responses as positive. Question 7 had 10 positive responses: 1 student stating that sometimes it is helpful to see another response if you are stuck in order to come up with an answer to help you. Out of the other 10 responses, six students mentioned that the student completion requirement eliminates cheating between students, and that they liked this as a characteristic of Schoology.

100% of the students who completed the survey had positive responses to Questions 8 and 9. Question 8 response trends included two students who mentioned their grades increasing because of the Learning Management System; three students mentioned the different types of activities offered; two students mentioned the instant feedback feature for quizzes and tests; and the other four students mentioned the accessibility of the program outside of school to access materials to message the teacher directly. Question 9 response trend shows the favorite feature within Schoology as the messaging option. This was evident with three students. Three other students favored taking quizzes and tests online. One student's response was "My favorite feature on Schoology is where you can make your own specific test, or that you can put video and many other resources in the project you are doing. Also, I like that instead of typing you can

put your voice in because if you're not a fast typer, but a fast speaker, than that will make it faster and easier for that student."

Question 10 was open ended and asked students to share anything else about their experience with Schoology. Many of the students shared positive statements that supported Schoology in their class and did not have anything they would change about Schoology. The one positive and negative response stated, "To be totally honest, Schoology should be an all or nothing activity. You should either do it every day or not at all. I say this because in science we use it every so often. It just becomes annoying to have to use it once and a while." For this student, using it in Social Studies every day and logging into the computers at the beginning of class as the expectation is a different style of how Schoology is being used compared to his Science class. The questions that generated any type of negative student response (1, 2, 5, 7, 10) were examined. Student negative responses included the internet not working and the stress of knowing that multiple attempts on an assessment were required until mastery was achieved. The internet not working is not a complaint of the program itself, but rather, a larger-scale implementation issue that the district will have to continue working on. The district leaders have mentioned light-switch dependability for internet accessibility as the goal. A negative student response about the stress of 100% mastery, demonstrates the students' ability to recognize that mastery achievement takes a longer time. Students must do the best they can on early attempts to avoid time and energy on additional attempts.

Student Survey Results				
Question	**Survey Question**	**+**	**-**	**+/-**
1	How has your experience with Schoology been in this class?	9	0	2

2	Do you think that it is helpful to have to take a quiz until you receive 100%? Why or why not?	9	1	1
3	Do you think that your unit test score increased because of the 100% mastery requirement on assignments throughout this unit?	11	0	0
4	What do you like about Schoology?	11	0	0
5	Is there anything that you don't like about Schoology?	7	4	0
6	What do you think about having an order you must complete your assignments on Schoology? Does that help you stay organized or on task?	11	0	0
7	What do you think about having to post before you can see someone else's response?	10	1	0
8	Do you think that using Schoology has helped you learn better in class? Why/why not?	11	0	0
9	What is your favorite feature within Schoology that you have had experience with?	11	0	0
10	Is there anything else you want to add about your experience with Schoology?	10	0	1
Totals		100	6	4

Figure 1.4. Student Survey Results. This table outlines each of the 10 survey questions and the positive, negative, and positive/negative responses that students made in their surveys regarding their Schoology experience.

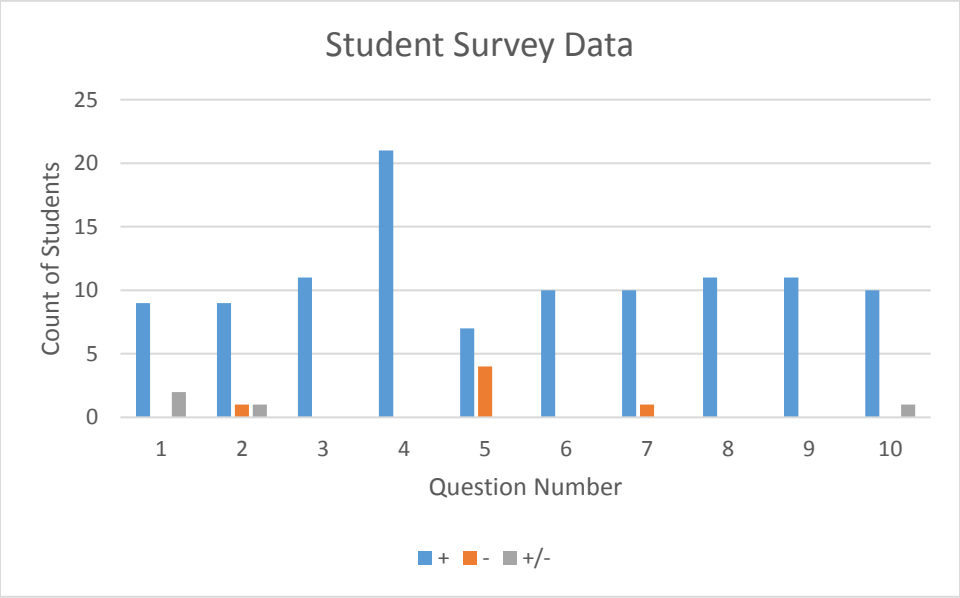

Figure 1.5. Student Survey Data. This graph illustrates the distribution of student survey responses: positive, negative, and a combination.

Section Five: Conclusions and Implications

Conclusions

This study demonstrated that students overall enjoy and like working with the Learning Management System program, Schoology. This study supports Schoology implementation into school districts based upon the data collected. The data supports the idea that a Learning Management Program, Schoology, allows students to have more flexibility with assignments and accessibility outside of the regular class period. Additionally, the organization that programs such as Schoology offers to students is favored.

This study supports the integration of a Learning Management System in a school setting to support student learning. A Learning Management System is a way to offer content and instruction in a unique way. Students respond well to the individualized lessons or unique requirements that tailor a lesson to each of their needs. Putting a lesson for any content into Schoology does not necessarily make the lesson a better lesson, it just offers an alternative modality for students (and teachers). The use of student completion requirements has been proven effective in this study to benefit student learning. The data from this study showed that students' unit assessment scores increased on average by 9.37%. Out of the 26 students, 21 students had a positive change in their scores across units, 1 student had no change, and only 4 students had a slight negative change in their scores. The negative change was only 2.38%. Additionally, when the negative changes were not considered, the 21 students who increased in

test scores went up on an average of 12.05% across units. Students' understanding of content is increased with the use of a Learning Management System's completion requirements.

Students want accessibility and the flexibility that Schoology offers as a LMS. The Learning Management System programs, like Schoology, offer 100% mastery as a student completion requirement that benefits student learning. Features like these should be used throughout units to increase exposure to content and re-teaching in order to reach mastery. Differentiated instruction is an essential part of teaching and should be used as much and as often as possible. With the use of student completion requirements at an individual level, teachers can customize lessons to meet each of their students' abilities and needs, and do it rather easily. It is not just the increase in assessment grades but the use of the technology as a way to make the most out of classroom instruction time. Students who need extra attempts on a check for understanding can take them. Those who do not, can move on to the next assignment.

Schoology offers task organization and clarity. Adolescent students need significant organizational support. Fortunately, Schoology offers teachers many options to help students such as discussions, pages, and media albums. All of these options are available for teachers to select for students. Individual assignments on Schoology are easily placed into folders and portfolios in order to provide a more structured class for students. In the student survey responses, one of the main points that students shared about what they like about Schoology was that all of their materials were organized and accessible without having to bring any folder or binder home. Teachers and administrators that have rights on a Schoology course page are able

to publish or unpublish any task until they want students to view it. Due dates, reminders, and notifications are also customizable for each task to keep students aware of pending assignments. The order of assignments and notifications received by students on their Schoology pages made it easier to stay on task. When students know that there is more work to be done, they work harder during class and value their time staying on task.

Implications for Student Learning

A Learning Management System offers a way to communicate and present information in a unique way, unlike what students (and teachers) are used to in the traditional classroom setting. Gunn and Hollingsworth (2013) argue the value of technology integration in classrooms stating, "research verifies the value of information and communication technology in the classroom. It has demonstrated that they can reduce learning barriers, improve academic success, increase student chances for learning success, lead to higher high school completion statistics, create a greater sense of adaptive communication and school community, and provide great opportunity for flexible access to learning" (p. 201). Student learning in the classroom does not improve just from creating paper lessons into online lessons. In the ever-changing field of education, increasing the amount of 1:1 implementation at all grade levels helps teachers meet the needs of all students. The real benefit of technology as a learning management system is the teacher's ability to design, customize, and create unique lessons for each student in the classroom. This way, students are not all doing the same thing and not all working through the same assignment at the same time. This calls for teachers to thoroughly know their students' unique learning style characteristics to tailor lessons accordingly. Teachers need to individually support students and

make customizations based on previous data collected and understandings of each student and how they learn best.

Implications for Teaching

The pedagogical implications should be taken into account, as it is the success of our students that is the most important consideration when implementing and technological initiative in the classroom. Andert and Alexakis (2015) emphasize the importance of technology not replacing teachers, but teachers using the technology as a support for learning and collaboration. The authors state, "…a teacher who can be replaced by a machine, should be" (p. 132). If a teacher eliminates the importance of their work with students by solely working within computers, then teachers are going to eliminate job security for themselves. There needs to be an understanding of technology as a transformative tool that is responsive to teacher knowledge, awareness and scaffolding for individual student needs. Many students need different tools to learn, and technology is just one of them.

Technology can do many things that people cannot. One aspect that this Learning Management System cam institute is student completion requirements and progress monitoring. These would not be feasible to do without the program. In no way is this researcher advocating for the elimination of teacher jobs. However, teachers do need to be transformative and responsive to student needs and differences. The authors, Watson, Watson, and Reigeluth (2013) state in their abstract, in order to meet the needs of today's knowledge economy, education needs to move byond the industrial age approach of treating all learners as if they are the same and adopt a learner-centered model of education suitable for the information age" (p. 332).

Limitations

One limitation that influenced the results of this study is the number of students who participated in the survey. Only 11 of the 26 students in the class returned informed consent and were able to participate in the study. There is a possibility that the missing students would show different results or opinions regarding Schoology as their Learning Management System in Social Studies. This researcher also questions the transferability of these findings to other content areas in a classroom and school setting. The data was not compared with multiple content areas or subject areas, but just one social studies classroom.

Suggestions for Future Research

One aspect of this topic that was discussed in the literature review was the implementation of the technology on a large scale. For example, the research done from the Gunn and Hollingsworth (2013) study on the rollout of professional development opportunities showed the importance of facilitating conversation about new changes between faculty and administrators. Further research needs to be done to determine the most effective implementation plan of a Learning Management System program relative to the needs of different size districts and the teachers within them. Additionally, effective professional development for a Learning Management System needs to be determined for the best implementation practices. Nevertheless, although there can be many recommendations for further study, there is sufficient evidence from this study to suggest the positive impact of Schoology on student learning and its ability to increase assessment scores and differentiate instruction.

Overall Significance of the Study

As school districts begin the transition process for their teachers and students to implement instructional technology practices within their classrooms, the traditional model of teaching and learning will forever be changed. Any change takes time and districts need to be prepared for this when implementing a Learning Management System such as Schoology. Educators cannot deny the power of technology tools to support student learning in the classroom. Technology lends itself to extend the learning of students beyond the constraints of the worksheets, the whole class lessons, and the "one assessment at a time" traditional practice. Learning Management Programs, such as Schoology, allow for resources, exposure to content, and multiple assessments to become the common practice for all teachers. In effect, this extends the classroom beyond its physical walls. A Learning Management System provides students with multiple pathways for success, and this makes learning more attainable for a majority of students. A Learning Management System provides teachers with a platform to reach the individual instructional needs of more students in our classrooms.

References

Andert, Darlene & Alexakis, George (2015). Virtual teaming and digital learning strategies: preparing students for a global workspace. *Merlot Journal of Online Learning and Teaching*, 11, 1, 122-148.

Gunn, Thelma M. & Hollingsworth, Maurice (2013). The implementation and assessment of a shared 21st century learning vision: a district-based approach. *Journal of Research on Technology in Education*, 45, 3, 201-228.

Lalley, James & Gentile, Ronald (2009). Classroom Assessment and Grading to Assure Mastery. Theory into Practice: Classroom Assessment, 48, 1, 28-35.

Lochner, Bianca, Conrad, Rita-Marie & Graham, Edward (2015). Secondary teachers'concerns in adopting learning management systems: a U.S. perspective. *Tech Trends: Linking Research & Practice to Improving Learning*, 59, 5, 62-70.

Morgan, Hani (2013). Maximizing student success with Differentiated Learning, *Clearing House: A Journal of Educational Strategies, Issues and Ideas* 87:1, 34-38.

Watson, William R. & Watson, Sunnie Lee (2007). An argument for clarity: what are learning management systems, what are they not, and what should they become? *Tech Trends*, 51, 2.

Watson, W. R., Watson, S. L. & Reigeluth, C. M. (2013). Education 3.0: breaking the mold with technology. *Interactive Learning Environments*, 23, 3, 332-343.